AMENDMENT TO THE CLAIMS

Claim 1 (canceled)

Claim 2 (new): A method to provide for fail-safe operation in a system of stack switches, the method comprising:

assigning a unique identifier to each of a plurality of stack switches, the identifiers specifying a management hierarchy of the respective switches;

assigning one or more stack management functions to a first stack switch of the plurality of stack switches, the first stack switch being the first in the management hierarchy of the plurality of stack switches; and

if the first stack switch is unable to execute the one or more stack management functions, automatically assigning said one or more management functions to a second stack switch of the plurality of stack switches, the second stack switch being the second in the management hierarchy of the plurality of stack switches.

Claim 3 (new): The method of claim 2, wherein the stack management functions comprise synchronizing one or more databases maintained by one or more of the plurality of stack switches.

Claim 4 (new): The method of claim 3, wherein the one or more databases comprise topology information for the plurality of stack switches.

Claim 5 (new): The method of claim 4, wherein the topology information comprises addresses of substantially all nodes reachable through a port of any switch of the plurality of stack switch.

Claim 6 (new): The method of claim 5, wherein the addresses of the nodes are media access control (MAC) addresses.

Claim 7 (new): The method of claim 2, wherein the unique identifiers of the plurality of stack switches are consecutively numbered integers.

Claim 8 (new): The method of claim 2, wherein the plurality of stack switches comprise local area network (LAN) switches.

Claim 9 (new): The method of claim 2, wherein the plurality of stack switches are operatively coupled via communications links forming a full duplex ring.

Claim 10 (new): The method of claim 2, wherein the first stack switch is unable to execute the one or more stack management functions because of a communications link failure within the full duplex ring.

Claim 11 (new): The method of claim 2, wherein the unique identifiers further serve as stack switch identifiers.

Claim 12 (new): A stack switch in a plurality of stack switches adapted to provide for fail-safe operation, the stack switch comprising:

a plurality of ports comprising at least one stack port operatively coupling the stack switch to the plurality of stack switches; and

a communication management module associated with a unique identifier specifying a management hierarchy of the stack switch with respect to the plurality of stack switches;

wherein the communication management module is adapted to perform one or more stack switch management functions in response to the stack switch becoming first in the management hierarchy of the plurality of stack switches.

Claim 13 (new): The stack switch of claim 12, wherein the one or more stack switch management functions comprises synchronizing managed information of the plurality of stack switches.

Claim 14 (new): The stack switch of claim 13, wherein said managed information comprises topology information associated with each of the plurality of switches.

Claim 15 (new): The stack switch of claim 13, wherein said managed information is selected from the group consisting of: media access control (MAC) address tables, routing tables, resolution protocol (ARP) tables, virtual local area network (VLAN) membership tables, access control list (ACL) rules, multicast groups membership tables, link aggregation ports, or a combination thereof.

Claim 16 (new): The stack switch of claim 12, wherein the stack switch further comprises a stack manager adapted, in response to the stack switch becoming first in the management hierarchy of the plurality of stack switches, to:

discover a topology of the plurality of stack switches; and

generate a shortest path between each pair of stack switches of the plurality of stack switches.

Claim 17 (new): The stack switch of claim 16, wherein the stack manager is further adapted, if and when the stack switch becomes first in the management hierarchy of the plurality of stack switches, to detect the insertion or removal of a stack switch of the plurality of stack switches.

Claim 18 (new): The stack switch of claim 16, wherein the stack switch is further adapted to exchange keep-alive messages with a primary stack switch of the plurality of stack switches to determine if and when the stack switch becomes first in the management hierarchy of the plurality of stack switches.

Claim 19 (new): The stack switch of claim 12, wherein the switch further comprises a chassis supervisor adapted to inform one or more of the plurality of stack switches of the management hierarchy if and when the stack switch becomes first in the management hierarchy of the plurality of stack switches.

Claim 20 (new): The stack switch of claim 19, wherein an Inter-Processor Communication (IPC) protocol is employed by the chassis supervisor to inform one or more of the plurality of stack switches of changes in the management hierarchy.

Claim 21 (new): A system of stack switches operatively linked via a full duplex ring, the system adapted to provide for fail-safe operation, the system comprising:

three or more stack switches, each stack switch having a configuration management module (CMM), wherein each stack switch is associated with a stack switch identifier indicating the management hierarchy of the respective stack switch with respect to the three or more stack switches;

wherein the CMM of each of the three of more stack switches is adapted, if first in the management hierarchy of the three or more of stack switches, to:

solicit configuration information updates from each of the other three or more stack switch, and

transmit said configuration information from each of the other three or more stack switch to each of the other three or more stack switches;

wherein each of the three or more stack switches is adapted to be first in the management hierarchy if there none of the three or more stack switches is higher in the management hierarchy is operational.

Claim 22 (new): The system of stack switches of claim 21, wherein the configuration information updates from each of the other three or more stack switches comprises an address table of nodes reachable through each respective stack switch.

Claim 23 (new): A system of stack switches comprising:

a full duplex ring; and

a plurality of stack switches operatively linked via the duplex ring, each stack switch comprising:

a plurality of local ports for receiving ingress protocol data units (PDUs) and transmitting egress PDUs, and

one or more tables for provisioning quality of service (QoS) for the ingress PDUs transmitted, via the duplex ring, from the local ports of each of the plurality of stack switches to the local ports of every other stack switch of the plurality of stack switches.

Claim 24 (new): The system of stack switches of claim 23, wherein the one or more tables comprise priority values for transmission of one or more ingress PDUs between stack switches.

Claim 25 (new): The system of stack switches of claim 24, wherein the priority values are determined based on: the stack switch the ingress PDUs are received, the local port the ingress PDUs are received, the stack switch to which the egress PDUs are transmitted, and the local port to which the egress PDUs are transmitted, and a priority of the ingress PDUs.

Claim 26 (new): The system of stack switches of claim 24, wherein the priority value for one or more PDUs transmitted via the duplex ring is different than priority value of the respective one or more ingress PDUs.